



DATA VALIDATION REPORT

Gold King Mine Long Term Monitoring

SAMPLE DELIVERY GROUP: 680-130588-1

Prepared by

MEC^X
12269 East Vassar Drive
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I. INTRODUCTION

Task Order Title: Gold King Mine Long Term Monitoring
Project No.: 20408.012.001.0397.00
Sample Delivery Group: 680-130588-1
EPA Project Manager: Steve Merritt
Weston Project Manager: Mark Blanchard
TDD No.: 0001/1510-02
Matrix: Sediment
QC Level: Stage 2A
No. of Samples: 8
No. of Reanalyses/Dilutions: 0
Laboratory: TestAmerica - Denver

Table 1. Sample Identification

<i>Location ID</i>	<i>Lab Sample Name</i>	<i>Matrix Type</i>	<i>Collection Date</i>	<i>Method</i>
A73_SED_100316	680-130588-1	Sediment	10/3/16 12:15 PM	9060A
A75D_SED_100316	680-130588-2	Sediment	10/3/16 9:00 AM	9060A
A75D_SED_100316D	680-130588-3	Sediment	10/3/16 9:00 AM	9060A
AR19-3_SED_100416	680-130588-4	Sediment	10/4/16 8:10 AM	9060A
AR7-2_SED_100416	680-130588-6	Sediment	10/4/16 10:35 AM	9060A
AR7-2_SED_100416D	680-130588-7	Sediment	10/4/16 10:35 AM	9060A
AR2-7a_SED_100416	680-130588-5	Sediment	10/4/16 12:10 PM	9060A
FW-012_SED_100216	680-130588-8	Sediment	10/2/16 3:00 PM	9060A

II. Sample Management

Anomalies regarding sample management are noted below. The samples were received intact and within the temperature limits of $>0^{\circ}\text{C}$ to $<6^{\circ}\text{C}$. The chain-of-custody (COC) was appropriately signed and dated by field and laboratory personnel.

The following issue was noted:

- According to the LogIn Sample Receipt Checklist, custody seals were not present on the shipping or sample containers upon receipt at TA-DEN.



Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. The associated value is the sample detection limit or the quantitation limit for perchlorate only.
UB	The analyte was detected in the sample and in either the associated laboratory blank or field blank. If detected below the reporting limit (RL) the analyte result was reported as non-detected at the RL due to blank contamination. If detected above the RL, the analyte result was reported as non-detected at the reported result due to blank contamination.	The analyte was detected in the sample and in either the associated laboratory blank or field blank. If detected below the reporting limit (RL) the analyte result was reported as non-detected at the RL due to blank contamination. If detected above the RL, the analyte result was reported as non-detected at the reported result due to blank contamination.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential positive bias.
J-	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential negative bias.



Qualifier	Organics	Inorganics
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
UJB	The analyte was detected in the sample and in either the associated laboratory blank or field blank; the analyte result was reported as non-detected at either the RL or the reported result. The reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The analyte was detected in the sample and in either the associated laboratory blank or field blank; the analyte result was reported as non-detected at either the RL or the reported result. The reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

**Qualification Code Reference Table**

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995 or calibration was noncompliant.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
L1	LCS/LCSD RPD was outside control limits.	LCS/LCSD RPD was outside control limits.
Q	MS/MSD recovery was poor.	MS recovery was poor.
Q1	MS/MSD RPD was outside control limits.	MS/MSD RPD was outside control limits.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	ICPMS tune was not compliant.
T	Presumed contamination as indicated by the trip blank results.	Not applicable.
+	False positive – reported compound was not present.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
F1	Field duplicate results were outside the control limit.	Field duplicate results were outside the control limit.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.



Qualifier	Organics	Inorganics
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
*II, *III	Unusual problems found with the data that have been described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Unusual problems found with the data that have been described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. Method Analyses

A. Method 9060A—Total Organic Carbon (TOC)

Reviewed By: M. Hilchey

Date Reviewed: October 26 and November 2, 2016

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the *Quality Assurance Project Plan for U.S. EPA Region 8 CERCLA Site Assessment; Sampling and Analysis Plan/Quality Assurance Project Plan for Gold King Mine Release, Silverton, San Juan County, Colorado* (2015); *United States Environmental Protection Agency Contract Laboratory Program Statement of Work for Inorganic Superfund Methods; EPA Method 9060A*; and the *National Functional Guidelines for Superfund Inorganic Data Review* (2014).

- Holding Times: The required analytical holding time, 28 days for TOC, was met.
- Analytical Method Blanks: There were no detects in the method blank.
- Laboratory Control Samples: Laboratory control sample recovery met laboratory acceptance limits.
- Laboratory Duplicates: Laboratory duplicate analysis was performed on sample A73_SED_100316. Laboratory duplicate analyses were not performed on a sample from this SDG. The RPD met the QAPP control limit of $\leq 20\%$.
- Matrix Spike/Matrix Spike Duplicate (MS/MSD): MS/MSD analyses were performed on sample A73_SED_100316. Recoveries were within the laboratory control limits and the RPD was within the QAPP control limit of $\leq 20\%$.
- Field QC Samples: MEC^X evaluated field quality control (QC) samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:
 - Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.
 - Field Duplicates: Samples A75D_SED_100316 and A75D_SED_100316D, and samples AR7-2_SED_100416 and AR7-2_SED_100416D were identified as field duplicate pairs. As TOC results were nondetect for all field duplicate pair samples, field duplicate agreement is considered to be good.

Validated Sample Result Forms: 680-130588-1

Analysis Method 9060A

Sample Name A73_SED_100316 **Matrix Type:** Solid

Lab Sample Name: 680-130588-1 **Sample Date:** 10/3/2016 12:15:00 PM

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon	T	7440-44-0	27	4	1.7	g/Kg			

Sample Name A75D_SED_100316 **Matrix Type:** Solid

Lab Sample Name: 680-130588-2 **Sample Date:** 10/3/2016 9:00:00 AM

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon	T	7440-44-0	1.7	4	1.7	g/Kg	U	U	

Sample Name A75D_SED_100316D **Matrix Type:** Solid

Lab Sample Name: 680-130588-3 **Sample Date:** 10/3/2016 9:00:00 AM

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon	T	7440-44-0	1.7	4	1.7	g/Kg	U	U	

Sample Name AR19-3_SED_100416 **Matrix Type:** Solid

Lab Sample Name: 680-130588-4 **Sample Date:** 10/4/2016 8:10:00 AM

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon	T	7440-44-0	14	4	1.7	g/Kg			

Sample Name AR2-7a_SED_100416 **Matrix Type:** Solid

Lab Sample Name: 680-130588-5 **Sample Date:** 10/4/2016 12:10:00 PM

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon	T	7440-44-0	1.7	4	1.7	g/Kg	U	U	

Sample Name AR7-2_SED_100416 **Matrix Type:** Solid

Lab Sample Name: 680-130588-6 **Sample Date:** 10/4/2016 10:35:00 AM

Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon	T	7440-44-0	1.7	4	1.7	g/Kg	U	U	

Analysis Method 9060A

Sample Name	AR7-2_SED_100416D	Matrix Type:	Solid
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Lab Sample Name:	680-130588-7	Sample Date:	10/4/2016 10:35:00 AM
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Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon	T	7440-44-0	1.7	4	1.7	g/Kg	U	U	

Sample Name	FW-012_SED_100216	Matrix Type:	Solid
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Lab Sample Name:	680-130588-8	Sample Date:	10/2/2016 3:00:00 PM
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Analyte	Total/Dissolved	CAS No	Result Value	Reporting Limit	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon	T	7440-44-0	5.2	4	1.7	g/Kg			